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NON-CHROMATE PRIMER FOR PAINTING

STATEMENT OF GOVERNMENT INTEREST

[0001] The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefore.

BACKGROUND OF THE INVENTION

(1) FIELD OF THE INVENTION

[0002] The present invention is directed to corrosion protection of stainless steel and aluminum alloys. In particular, the present invention is directed to a unique use of titanate compounds to replace chromates in metal primer paints used for corrosion protection on metal substrates.

(2) DESCRIPTION OF THE PRIOR ART

[0003] Currently, technology is being sought that for a non-chromate conversion coating of certain types of aluminum. Included in this work are potential candidates including: acidic aqueous solutions containing potassium permanganate and cerous chloride, silane based materials, sol-gel technologies, vapor deposition processes, thermal spray technologies including high velocity oxygen and flame spray technologies, and anodizing using sulfuric acid / boric acid processes. Other chromate free

conversions being considered are those that form a thin layer of aluminum oxyhydroxide, which is then sealed using solutions of metallic salts and organic compounds. Work has also been conducted that focused on organo-functional silanes as a possible replacement candidate for protecting aluminum and stainless steel alloys. Methods have been studied on titanium substrates to replace conventional acid etch and zinc chromate preparations. Silanes were investigated due to their good coupling agent capabilities to form covalent bonds with the titanium oxides sites on one side and the structural adhesive coatings on the other side. This covalent bonding and the hydrophobic nature of the silanes restrict bond degradation.

SUMMARY OF THE INVENTION

[0004] It is a general purpose and object of the present invention to produce a primer for painting aluminum and steel alloys that does not have any chromates.

[0005] The above objects are accomplished with the present invention by using solvents in combination with titanates to replace zinc chromate.

DETAILED DESCRIPTION OF THE INVENTION

[0006] The present invention will seek to replace chromates with titanates in primer for painting. The formulation for a

non-chromate primer for painting is as follows: xylene 4% by wt, 2-propanol, 27% by wt, 2-butoxyethanol 10% by wt, methyl isobutyl ketone 9% by wt, ethanol 2% by wt, isopropyl acetate 3% by wt, dibutyl phthalate 1% by wt, talc 27.8% by wt, titanium dioxide 5% by wt, carbon black 0.2% by wt, titanium zinc oxide 6% by wt and toluene 5% by wt.

ABSTRACT

The present invention uses titanate compounds to replace chromates in metal primer paints used for corrosion protection on metal substrates.